RESEARCH

ANALYSIS OF SIMPLE NASAL BONE FRACTURE AND THE EFFECT OF IT ON OLFACTORY DYSFUNCTION

Özgür AKDOĞAN, MD; Adin SELÇUK, MD; Demirhan GÜRBÜZ, MD; Hüseyin DERE, MD
Ankara Numune Training and Research Hospital, 4th Otorhinolaryngology Clinic, Ankara, Turkey

SUMMARY

Objective: The aim of this study is to analyze the nasal fracture and associated olfactory dysfunction retrospectively.

Methods: The retrospective analysis of 42 patients with nasal fracture treated with closed reduction at Otolaryngology Head and Neck Surgery Department of the Ankara Numune Research and Educational Hospital.

Results: There were 42 patients with nasal and or septal fractures evaluated in emergency department. Diagnosis of the fracture was made by direct nasal graphy in all cases. All nasal fractures were treated by closed reduction and olfactory dysfunction was noted in 12 patients.

Conclusions: It is concluded that direct nasal graphy for evaluation and closed reduction for treatment are sufficient for nasal bone fracture not associated with other facial bone fractures. These patients should also be evaluated for disturbance in sense of smell.

Keywords: Nasal trauma, fracture, nasal graphy, olfactory dysfunction

NAZAL KEMİK FRAKTÜRÜNÜN DEĞERLENDİRİLMESİ VE OLFAKTÖR BOZUKLUĞUN ETİYOLOJİSİNDEKİ YERİ

ÖZET

Amaç: Bu çalışmanın amacı retrospektif olarak nazal fraktür analizi ile olfaktör disfonksiyonunu ilişkisini gözlemlemektir.

Metod: Retrospektif olarak Ankara Numune Eğitim ve Araştırma Hastanesine nazal fraktür tanısı konmuş ve kapalı redüksiyon uygulanan 42 hasta değerlendirilmeye alındı.

Bulgular: Acil departmanında nazal veya septal fraktür tanısı ile 42 hasta değerlendirildi. Nazal fraktür tanısı tüm hastalarda nazal grafi ile konuldu. Nazal fraktür vakalarının hepsine kapalı redüksiyon uygulandı ve hastaların 12 ' sinde olfaktör disfonksiyon olduğu izlendi..

Sonuçlar: Nazal grafinin, fasiyal kemik deformitesi olmayan nazal fraktürlü hastaların değerlendirilmesinde yeterli olduğu düşünülmektedir. Bu hastaların aynı zamanda koku bozukluğu açısından değerlendirilmesi gerekir.

Anahtar Sözcükler: Nazal travma, nazal fraktür, nazal grafi, olfaktör disfonksiyon

INTRODUCTION

Nasal bone fractures are the commonest type of the bony facial injury seen in an emergency department because of the prominent position of the nose on facial skeleton. A fractured nose can be manipulated within two weeks, that is why the early follow-up is essential[1]. Delayed treatment often results in secondary deformities which are difficult to manage. Most of the nasal bone fractures are treated by closed reduction and nasal bones are fixed either internally or externally. Internal fixation is performed by gauze packing or by using wire[2]. Tremendous satisfaction with closed reduction has been reported with a success rate of 70 to 95 %[3,4,5]. There are so many patients presented to the physicians with complaints of smell disturbances after trauma which affects maxillofacial region or head. This study is the retrospective analysis of the nasal fracture treated with closed reduction at otolaryngology head and neck surgery department of the Ankara Numune Research and Educational Hospital.

Corresponding Author: Özgür Akdoğan MD; Ankara Numune Eğitim ve Araştırma Hastanesi, KBB, Ankara, Türkiye, Tel: 0312 435 47 85, E-mail: drozgurakdogan@gmail.com

Received: 28 January 2008, revised for:19 May 2008, accepted for publication: 25 May 2008

MATERIAL and METHODS

Between March 2006 and February 2007 there were 42 patients with nasal and or septal fractures evaluated in emergency department of otolaryngology head and neck surgery. The age, sex, etiology, associated injury, findings, complications and radiographic Evaluation were reviewed. All patients were asked if they have complaint about the smell. Patients with olfactory disturbances were evaluated by using the part of the section II and III of the Multiclinic smell and taste questionnaire[6]. All patients had plain radiograph of lateral nasal bone.

RESULTS

There were 35 men and 7 women. Their age distribution was from 17 to 73 with a mean age of 34.8. The causes of nasal injury were violence (n=18), traffic accident (n=9), fall – down (n=8) and work related (n= 7). The most frequent findings were nasal deviation (57.1 %), depression (9.5%), tenderness (42.8%) and swelling (40.2%). All nasal fractures were treated by closed reduction and reduction was carried out in average 2.3 days following injury. All interventions were performed under local anesthesia. Following anesthesia, nasal complex and nasal septum were manipulated into the premorbid anatomical position by using forceps and elevators. Nasal packs were placed bilaterally and external fixation was used after all.

Diagnosis of the fracture was made by plain graphy in all 87 cases. Patients were followed for a presence of the septal haematoma. Only 2 patients were treated because of haematoma. There was no abscess formation or saddle nose deformity. None of the patients required post traumatic septorhinoplasty. All patients were pleased with their esthetic results. There were 12 patients with a complaint of olfactory dysfunction after trauma. In the part of abnormal smell sensitivity of the Multiclinic smell and taste questionnaire (part of section II), 10 patients complained of abnormal smell sensitivity after trauma with fluctuation and localized both nostrils. Two patients had complaint of complete smell loss. The section III of the questionnaire contains questions about the consequences of olfactory dysfunction. Eight of the patients complained about olfactory dysfunction interfering with daily routine and affecting their general well being. Six of them had also effect in quality of life. All patients had negative effect in their taste sensation and 4 of them noted that they had decrease in their appetite.

DISCUSSION

Nasal bone fractureis a common occurrence in accident and emergency. The increasing prevalence of such an injury emphasizes the necessity of an epidemiologic survey and optimal management. The epidemiologic survey indicates that the incidence of nasal fracture and causes are different according to culture, religion, social economic status and geographic region.

Diagnosis of nasal fractures is based on the physical examination and radiographic evaluation. Simple radiograph of lateral nasal bone is important to show fracture and for medicolegal reasons. In 100 % of our patients, nasal fractures were diagnosed by nasal radiograph so we don't agree the insignificance of nasal radiogram in contrary to the literature[7,8,9]. For classification of the fractures beside the plain film computerized tomography (CT) also can be used[10]. However we don't perform CT evaluation in our emergency department because of the excessive workload. There was male predominance and mean age of our patients was 34.8. The most important reason of fracture was violence. Other causes were traffic accident, fall-down and work related. Another study that analyzes the nasal fracture reported the most common causes of the fractures as fall-down (35%), violence (26.5%), sport (17%), traffic accident (15%), and work related (6.5%),[10]. All of the patients were treated with the closed reduction of the average 2.3 days. This is because of the edema on the nasal dorsum at the time of first visit. Open reduction was not performed in any of the patients. The reason for this that there was not any patient associated with other facial bone fracture. Such patients are evaluated in plastic and reconstructive surgery department of our hospital.

We performed all procedure by local anesthesia. Because of our excessive workload, local anesthesia was preferred. In the literature effectiveness of the local anesthesia was shown as equal to the general anesthesia[11].

The presence of septal haematoma is important and requires urgent treatment because of leading complications of septal abscess and saddle nose deformity. Two patients were diagnosed with septal haematoma at second visit. Haematoma was evacuated and nasal packs were placed to the two nares, there was no complication after this procedure. Another complication of nasal trauma can be disturbance in sense of smell. Olfactory dysfunction most commonly occurs due to upper-respiratory-tract infections, trauma, and chronic rhinosinusitis. Head injury is the leading cause of posttraumatic anosmia. Complete or partial loss of olfactory function may occur when the nasal passages are blocked, olfactory nerves are injured or there are contusions or hemorrhages in olfactory centers of the brain[12]. In the literature, especially Le Fort fracture was found as complicated by compromised mucociliary clearance and olfactory disturbances[13]. Nasozygomatic-Le Fort fractures, fronto-orbital fractures, and pure Le Fort fractures were found to determine posttraumatic smell disturbances in these 19 patients. Nasal fractures, nasoorbital-ethmoidal fractures, ethmoidal fractures, frontal-Le Fort fractures, and nasal-Le Fort fractures did not determine any olfactory dysfunction[14]. In our study, 12 patients reported olfactory dysfunction after nasal trauma. All patients had negative effect in their taste sensation and 4 of

them reported that they had decrease in their appetite. We couldn't find any study reporting disturbance in sense of smell after nasal trauma which is not associated with other facial bone fracture and laceration.

CONLUSION

Successful management of nasal fracture is not so complicated. It is concluded that plain graphy for evaluation and closed reduction for treatment is sufficient for nasal bone fracture that is not associated with other facial bone fractures. Disturbance in sense of olfaction can be seen following simple nasal fracture and patients must be evaluated for this complication. Most important thing to avoid the complications is early and close follow up of the patients.

REFERENCES

1. Staffel, J. G: Optimizing treatment of nasal fractures. Laryngoscope 2002;112:1709–1719.
2. Morita R, Shimada K, Kawakami S: Facial protection masks after fracture treatment of the nasal bone to prevent re-injury in contact sports. J Craniofac Surg 2007;18(1):143-145.
3. Ridder GJ, Boedeker CC, Fradis M, Schipper J: Technique and timing 161 for closed reduction of isolated nasal fractures: A retrospective study. Ear Nose Throat J 2002; 81:49.
4. Illum P: Long-term results after treatment of nasal fractures. J Laryngol Otol 1986;100:273.
5. Newton CR, White PS: Nasal manipulation with intravenous sedation. Is it an acceptable and effective treatment? Rhinology 1998;36:114.
6. Nordin S, Brämerson A, Murphy C, Bende M: A Scandinavian adaptation of the Multi- Clinic Smell and Taste Questionnaire: evaluation of questions about olfaction. Acta Otolaryngol 2003;123(4):536-542.
7. OluwasanmiA. F, Pinto A. L: Management of nasal trauma–widespread misuse of radiographs. Clinical Performance and Quality Health Care 2000;8 (2):83–85.
8. Li, S, Papsin B. & Brown, D.H: Value of nasal radiograph in nasal trauma management. Journal of Otolaryngology 1996;25:162–164.
9. Nigam, A, Goni A, Benjamin A. & Dasgupta, A.R: The value of radiographs in the management of the fractured nose. Archives of Emergency Medicine 1993;10:293–297.
10. Hwang K, You SH, Kim SG, Lee SI: Analysis of nasal bone fractures; a six-year study of 503 patients. J Craniofac Surg 2006;17(2):261-264.
11. Khwaja S, Pahade AV, Luff D, Green MW, Green KM: Nasal fracture reduction: local versus general anaesthesia. Rhinology 2007;45(1):83-88.
12. Costanzo RM, Miwa T: Posttraumatic olfactory loss. Adv Otorhinolaryngol 2006;63:99- 107.